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THE PLANT DISEASE REPORTER

Issued By

THE PLANT DISEASE SURVEY

Division of Mycology and Disease Survey

BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING

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UNITED STATES DEPARTMENT OF AGRICULTURE

SOME NEW OR UNUSUAL RECORDS AND OUTSTANDING FEATURES OF
PLANT DISEASE DEVELOPMENT IN THE UNITED STATES IN 1951

Supplement 214

August 15, 1952



The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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THE PLANT DISEASE SURVEY
DIVISION OF MYCOLOGY AND DISEASE SURVEY

Plant Industry Station

Beltsville, Maryland

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PLANT DISEASE DEVELOPMENT IN THE UNITED STATES IN 1951

Compiled by Nellie W. Nance

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As in previous years, this 1951 summary of outstanding plant disease occurrences in the United States has been taken for the most part from reports to the Plant Disease Survey or from articles in *Phytopathology*.

General Summary of Weather Conditions -- 1951. In general, 1951 was a cold, wet year, with more than the usual number of weather extremes. The temperature averaged 52.4° which was 0.8° below the long-term mean and 0.1° below the average for 1950. The year was warmer than normal in the extreme eastern and southern tier of States from Maine to Arizona and in the southwestern portion of the far Western Plateau, but plus departures exceeded 2° in only scattered areas. Elsewhere the year was colder than normal, with deficiencies of 5° or more in the north-central interior. Monthly temperatures were deficient for all, except 3 months, with November showing the greatest deficiency, 3.6° , and February the greatest excess, 1.4° . Extreme temperatures ranged from -60° at Taylor Park, Colorado, on February 1 to 125° at Case Creek, California, on July 18. This extreme minimum was the lowest temperature ever recorded in Colorado, and the tenth time that a minimum as low as -60° officially has been recorded in the United States. During this coldest period of the year New Mexico recorded an all-time low of -50° and Indiana one of -35° .

Total precipitation for the United States averaged 30.22 inches which was exactly an inch above the long-term mean, and 0.54 inch more than in 1950. The departure pattern was very uneven, especially in the far West. In the extreme eastern and southern portions of the country from Virginia to Arizona precipitation was generally deficient. There were marked excesses in the central and northcentral interior and the extreme Northeast; also in central Arizona and northern Utah. Extreme deficiencies occurred in southwestern Texas and southeastern New Mexico. January, April, May, and August were the only months showing deficiencies based on the United States as a whole. May showed the greatest deficiency, 0.50 inch, and December the greatest excess, 0.66 inch. This was the wettest year on record in Kansas and Michigan. Annual rainfall ranged from 140.16 inches at Valsetz, Oregon, to 0.32 inch at Greenland Ranch, California.

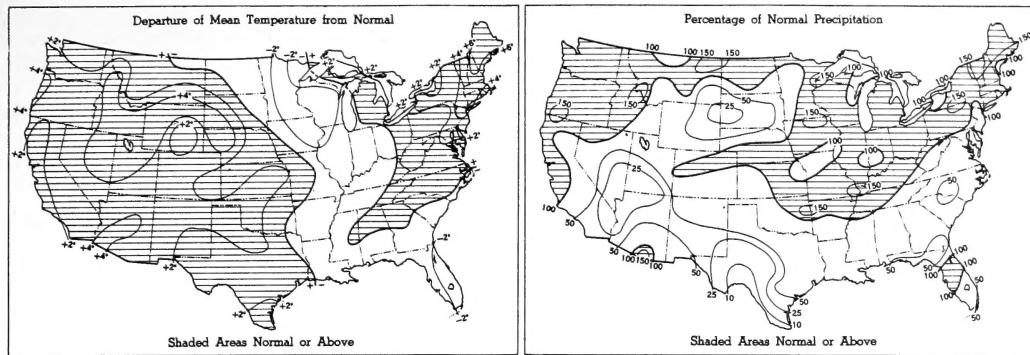
In most areas snowfall was above normal for the year. The average annual snowfall for Iowa, Wisconsin, and Michigan was the greatest on record. Snowfall was not unusually heavy in January and February, although it occurred at stations near the mouth of the Mississippi River for the first time in many years. But March snowfall was extremely heavy in northern areas westward from the Great Lakes. During the first 3 days of June one of the heaviest late-season snowstorms on record occurred in the northern Rockies, with amounts for the storm ranging up to 30 inches in Wyoming. Snowfall began in September in many northern areas and was heavier than usual during the remainder of the year, with two outstanding storms. The first occurred in southern Missouri and surrounding areas from November 5 to 7, and the second during the closing days of December when heavy snowfall from the Sierra Nevada Mountains in central California to the Continental Divide set new all-time records in northern Utah and western Colorado.

The outstanding feature of the year's weather was the persistent cold, wet weather in the central and north-central interior that resulted in one of the most destructive floods in the Nation's history, and in low yields and lower quality of corn and wheat in many areas.

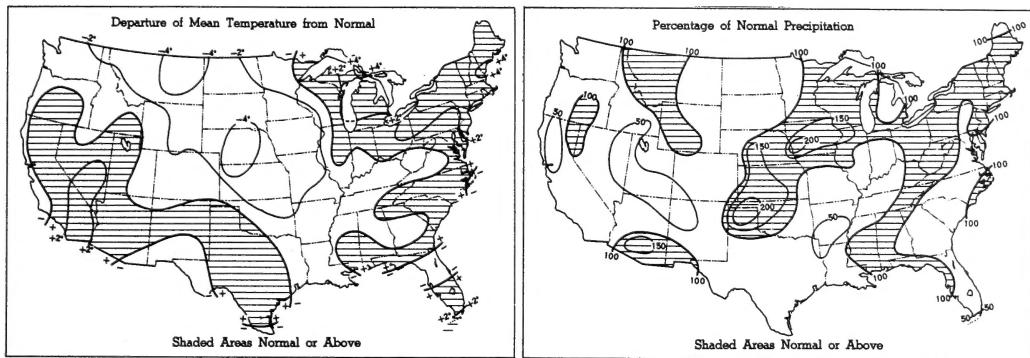
Severe local storms were frequent during June and July in central areas and caused more than the usual amount of damage. During the closing days of January one of the worst icestorms on record occurred over a large area from eastern Texas to New England and was followed by a damaging freeze in the western Gulf States. The hurricane season was mild; there was no loss of life and in few seasons has damage been less. (Weather Bureau, Department of Commerce,

TEMPERATURE AND PRECIPITATION

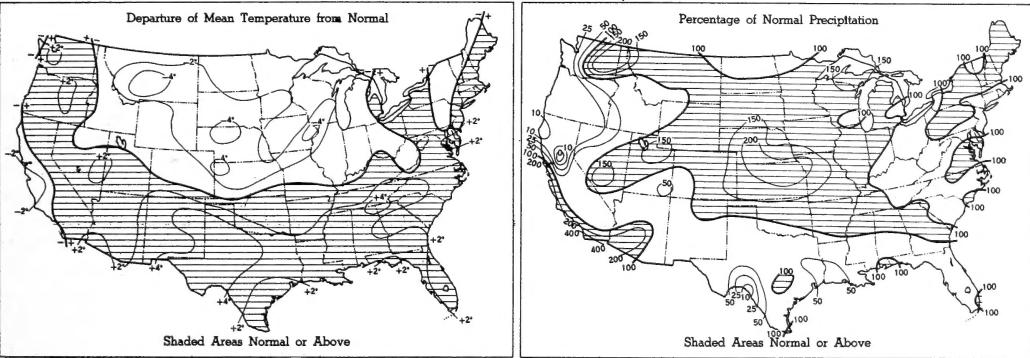
WINTER OF (DECEMBER-FEBRUARY) 1950-51



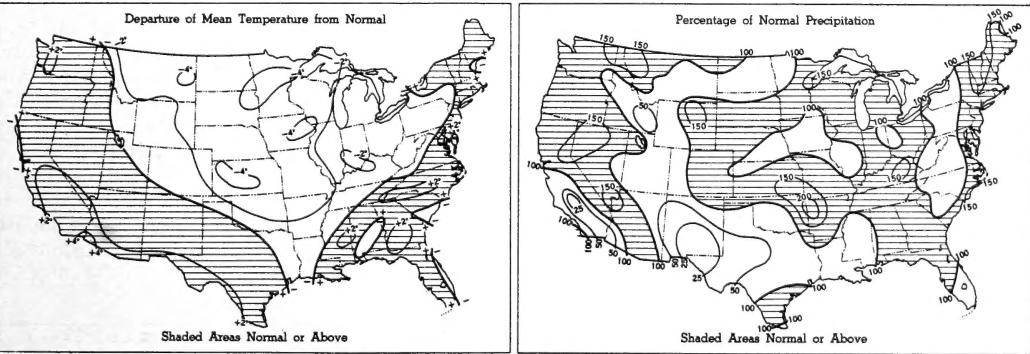
SPRING (MARCH-MAY) 1951



SUMMER OF 1951 (JUNE-AUGUST)



FALL OF 1951 (SEPTEMBER-NOVEMBER)



(From Weekly Weather and Crop Bulletin National Summary, Volume 38, 1951.)

May 11, 1952. Correspondence.)

Maps on page 143 show the temperature and precipitation for the winter of 1950-51, spring, summer and fall of 1951.

Weather in Relation to Plant Disease. Not many of the disease records cited in these compilations are especially concerned with weather relations. Nevertheless, since weather is one of the indispensable components of any disease situation, it seems advisable to give an account of the year's weather each time. Although the weather summaries are necessarily very general, they do show the seasonal progress, and provide a background at least for interpretation of weather's part in the occurrence of disease during the year. The accumulation of plant disease reports and of yearly weather summaries together may be helpful for future reference.

Noteworthy Observations. Following is a brief résumé of some but by no means all of the reports mentioning specific connection with weather conditions or other observations of interest.

In 1951 potato and tomato late blight continued the northwestward spread that was evident in the preceding year, but although widespread acreages were affected reduction in yield was low, owing to the warm dry weather from mid- to late season over the eastern portion of the United States and to adequate use of control measures.

Because of cool weather from late November until the middle of April diseases were not a serious factor in small grains in the southeastern coastal plain in 1950-51.

Botrytis blossom end rot of apple was more general and abundant throughout the Hudson Valley in New York than had ever been noticed before.

A leaf curl epidemic occurred in the peach growing areas of northern South Carolina, the first since the early 1940's. Cool, wet weather during late March and early April favored the spread and development of the disease.

During 1951, there was a severe outbreak of leaf blight of cantaloupe in the Rio Grande Valley of Texas, the first occurrence of such an epidemic in the last 14 years.

The first occurrence of bean rust in central Washington was found in the newly irrigated area of the Columbia Basin. The entire farm was ploughed out of sage brush in the spring of 1951.

Leaf blight (Helminthosporium turcicum) has become a disease of increasing prominence in many corn growing areas. Seed producers and corn breeders are well aware of the need for testing inbred lines and selecting for resistance. Diseased corn leaves are a source of infection in artificial and natural epidemics of the fungus.

Table 1. Diseases reported in States where they had not been found or reported on a particular host until 1951.*

Host Disease (Cause)	Where found	Remarks
CORN		
Cob rot (<u>Nigrospora oryzae</u>)	Maryland	Found on a small number of ears of field corn in two fields. (PDR 35: 386)
ALFALFA		
Gray mould <u>Botrytis</u> of the <u>cineraria</u> type	Wisconsin	During the long rainy and humid period in August 1951, alfalfa flowers turned brown soon after opening and remained adhering to the rachis. On growing plants as many as 5 successive racemes were destroyed. (PDR 36: 61)
Violet root rot (<u>Rhizoctonia crocorm</u>)	North Carolina	Found in alfalfa in one locality in the western part of the State in 1950 and in several locations in this region in 1951. (PDR 36: 60)

* For new State-host records of grass smuts from the Western States see *Mycologia* 43:67-77. 1951.

Table 1. (Continued)

Host			
Disease (Cause)		Where found	Remarks
COWPEA			
Red stem canker (<i>Phytophthora cactorum</i>)		South Carolina	Observed in a garden at Clemson. About 20 percent of the plants were infected and about 3 to 4 percent were killed. (PDR 35: 418)
SOYBEAN			
Brown stem rot (<i>Cephalosporium gregatum</i>)		Minnesota	First found in Sept. 1951 at Expt. Sta. Farm, St. Paul, later found in Freeborn County. (PDR 35: 509)
Stem canker (<i>Diaporthe phaseolorum</i> var. <i>batatas</i>)		Minnesota	Found in Waseca, Freeborn, Faribault, and Blue Earth Counties in southern Minn. in Sept. 1951. (PDR 35: 509)
APPLE			
Root rot (<i>Xylaria polymorpha</i>)		Georgia	Discovered in a Rabun County orchard on August 8. (PDR 35: 465)
BLUEBERRY			
Stunt (virus)		Maryland	The Scammell variety was severely affected in one location. (PDR 35: 386)
FIG			
(<i>Macrophoma fici</i>)		Maryland	Associated with a canker disease of cultivated fig, probably <i>Ficus carica</i> . (PDR 35: 385)
PEACH			
Anthracnose (<i>Glomerella cingulata</i>)		Michigan	Found in a commercial shipment of Hale-haven peaches from St. Joseph, Mich. (PDR 35: 276)
		West Virginia	Erly-Red-Fre variety obtained near Martinsburg, developed 1 to 2 percent of anthracnose lesions during storage tests at Beltsville, Md. (PDR 35: 465)
SWEET CHERRY			
X-disease (virus)		New York	Observed in Ontario County in 1949 for the first time, but not reported until 1951. (PDR 35: 256)
BITTERSWEET (CELASTRUS SCANDENS)			
Anthracnose (<i>Marssonina thomasiana</i>)		Maryland	Collected in Washington Co., in summer, 1947. (PDR 35: 413)
CAMELLIA			
Root rot (<i>Phytophthora cinnamomi</i>)		California	Severe losses occurred in nursery beds. (PDR 36: 211)

Table 1. (Continued)

Host Disease (Cause)	Where found	Remarks
ENGLISH IVY Scab (<u>Sphaceloma hederae</u>)	Maryland	Found on English ivy growing near Salisbury. (PDR 35: 194, 385)
GERANIUM Verticillium wilt (<u>Verticillium albo-atrum</u>)	Oregon	Specimens were collected from a home planting at Hillsboro, in August 1950. (PDR 36: 51)
HELLEBORUS NIGER Black leaf spot (<u>Coniothyrium hellebori</u>)	California New Jersey Ohio	Reported to be the most destructive disease of this ornamental plant in England and Holland. (PDR 35: 277)
ROSA MULTIFLORA Rose anthracnose (<u>Sphaceloma rosarum</u>)	Maryland	(PDR 35: 194)
COTTON Nematode root rot (<u>Pratylenchus leiocephalus</u>)	Louisiana	Affected cotton plants in Bossier Parish. (PDR 35: 388)
Root rot (<u>Thielaviopsis basicola</u>)	Texas	Isolated from Pima 32 cotton, collected Aug. 27, 1951 in two fields about 5 miles south of Canutillo. (PDR 36: 53)
MENTHA spp. Powdery mildew (<u>Erysiphe</u> sp.)	Oregon	Found in three fields in the Willamette Valley. (PDR 36: 245)
<u>Fusarium</u> sp. <u>Fusarium roseum</u> <u>Pythium</u> sp. <u>Rhizoctonia solani</u>	Oregon	Isolations revealed a complex of these fungi associated with root and rhizome rot. (PDR 36: 245)
MENTHA CANADENSIS		
M. CITRATA Anthracnose (<u>Sphaceloma menthae</u>)	Maryland	(PDR 34: 392. 1950) First rept. in Md., not included in the 1950 summary.)
TOBACCO Anthracnose (<u>Colletotrichum</u> sp.)	North Carolina	Observed in plant beds in five counties. (PDR 35: 276)
LAWSON CYPRESS, ORNAMENTAL Root rot (<u>Phytophthora cinnamomi</u>)	California	(PDR 36: 211)
OAK Oak wilt (<u>Chalara quercina</u>)	Michigan	Found on red oak in Cass County, Mich. First authentic case in this State. (PDR 35: 383)

Table 1. (Continued)

Host			
Disease (Cause)		Where found	Remarks
(Oak continued)		West Virginia	Statewide surveys showed oak wilt present in five counties. Evidence suggests that the disease has been present, though unrecognized, for several years. (PDR 35: 382)
PINE			
Root rot <i>(Phytophthora cinnamomi)</i>		California	(PDR 36: 211)
VIBURNUM OPULUS			
Spot anthracnose <i>(Sphaceloma viburni)</i>		Maryland	Caused serious damage to foliage at two locations in Somerset County. (PDR 35: 385)
BEAN, SNAP			
Alternaria leaf spot and dieback		Florida	Distribution of the fungus is limited to the Sanford-Zellwood area. These two locations are 26 miles apart. (PDR 35: 330)
CRUCIFERS			
Clubroot <i>(Plasmodiophora brassicae)</i>		Florida	Survey of the field revealed no definite source of infestation of the soil. Plants grown for home use were not introduced from other States. (PDR 35: 509)
POTATO			
<i>Meloidogyne hapla</i>		Maryland	Found in Pontiac potatoes showing small raised areas on the surface. (PDR 35: 386)
SPINACH			
Smut <i>(Entyloma ellisii)</i>		Washington	Found on Apr. 17, 1950 at Walla Walla. (Phytopath. 41: 854)

Table 2. Diseases found or reported in this country for the first time in 1951 = *; diseases found on new hosts = **.

Host			
Disease (Cause)		Where found	Remarks
BARLEY			
Yellow dwarf* (Virus)		California	New aphid-transmissible virus disease that became epidemic in Calif. in 1951. (PDR 35: 471)
PEACH			
<i>Microstroma</i> sp. **		South Carolina	Specimens found at the S. C. Sandhill Exp. Sta. near Columbia during August 1951. (PDR 35: 497)

Table 2. (Continued)

Host			
Disease (Cause)		Where found	Remarks
STRAWBERRY	:	:	:
Chlorotic phyllody (unknown cause)	:	Louisiana	Apparently new and undescribed, first observed in 1949 and again in 1950. Found scattered in many fields in four different parishes. (PDR 35: 495)
CALIFORNIA-NUTMEG	:	:	:
<u>Caeoma torreyae</u> n. sp.	:	California	Found on current season's leaves, especially on young plants.
<u>Clasterosporium obclavatum</u> n. sp.	:	California	Found on second and third year leaves. (Mycologia 43: 62-66)
FILBERT	:	:	:
<u>Labrella coryli</u> *	:	Maryland	Specimen came from Beltsville, growing on an experimental planting of F_1 hybrids. First report from North America. (PDR 35:437)
HIBISCUS ROSA-SINENSIS	:	:	:
H. SCHIZOPETALUS	:	:	:
Foot rot**	:	:	Foot rot was widespread both in nurseries and in private gardens. Leaf and stem blight was found chiefly in greenhouses and lath houses in nurseries where vegetative propagation by marcottage was practiced and where high humidities were maintained by frequent syringing. (Phytopath. 41: 19; 42: 144)
(<u>Phytophthora cactorum</u> var. <u>applanata</u>)	:	:	
Leaf and stem blight** (<u>P. palmivora</u>)	:	Louisiana	
JAPANESE LILAC	:	:	:
Witches'-broom** (? virus)	:	Maryland	Found in a yard in Takoma Park. (PDR 35: 556)
KENAF (HIBISCUS CANNABINUS)	:	:	:
Powdery mildew*	:	:	Found on kenaf leaves at Belle Glade, Nov. 17, 1951. (PDR 36: 52)
(<u>Leveillula taurica</u> f. <u>hibisci</u>)	:	Florida	
LILIUM AURATUM	:	:	:
Bulb rot	:	:	Recently isolated from lily bulbs imported from Japan. (Phytopath. 41: 941).
(<u>Botrytis liliorum</u>)	:	? California	
ARBOR VITAE	:	:	:
Root rot**	:	:	(PDR 36: 211)
(<u>Phytophthora cinnamomi</u>)	:	California	
BITTERSWEET (CELASTRUS SCANDENS)	:	:	:
Anthracnose**	:	:	Found in Ithaca, in late summer of 1948.
(<u>Marssonina thomasiana</u>)	:	New York	(Mycologia 43: 373. 1951)

Table 2. (Continued)

Host		Where found	Remarks
DEODAR			
Root rot** <u>(Phytophthora cinnamomi)</u>	California		(PDR 36: 211)
DOUGLAS-FIR (ROCKY MOUNTAIN)			
Witches'-broom*	Washington		Collected March 5, 1950, in Pullman.
			Extremely compact type of witches'-broom on Douglas-fir, first report in N. Amer. (Northwest Science 25: 183)
ILEX CORNUTA var. BURFORDI : (BURFORD HOLLY)			
Phyllosticta leaf spot** <u>P. haynaldi</u>	Georgia		Original specimens were collected in June 1949. In June 1950 the disease was noted throughout northeast Atlanta. The perfect stage of the fungus has not been determined, although the imperfect stage was collected throughout an entire year. (PDR 35: 412)
INCENSE CEDAR			
Root rot** <u>(Phytophthora cinnamomi)</u>	California		(PDR 36: 211)
ITALIAN CYPRESS			
Root rot** <u>(Phytophthora cinnamomi)</u>	California		(PDR 36: 211)
MYRTLE			
Root rot** <u>(Phytophthora cinnamomi)</u>	California		(PDR 36: 211)
SASSAFRAS ALBIDUM			
Ganoderma sp.**	New York		Large tree found dead on grounds of Brooklyn Botanic Garden in spring of 1950. (PDR 36: 28)
SWEET GUM			
New disease (undetermined)	Maryland		In 1949, in University Park and vicinity a survey showed that, of about 3,000 trees observed, 20 percent showed various stages of decline. By July 1951, most of these trees had died and about 25 percent of the remaining trees showed signs of the disease. (PDR 35: 295)
VIRGINIA PINE			
Stem rust <u>(Peridermium appalachianum) n. sp.</u>	North Carolina		First specimen collected in N. C. in 1948.
	Tennessee		No pycnial stage has been observed, and
	Virginia		no alternate host yet found. Susceptibility of other pines not known. (PDR 35: 335)
	West Virginia		Description of new species (Phytopath. 42: 115)

DISEASES OF CEREAL CROPS

R. W. Leukel reported that in the spring and summer of 1951 eighteen fungicides were tested for the control of bunt of wheat, and nine of these were tested also for the control of the smuts in oats and of stripe disease and covered smut in barley. (PDR 35: 445)

Tervet and Cassell reported that the identification of races of cereal rusts (Puccinia spp.) may be facilitated by using cyclone separators for collecting the spores and spraying them in talc on the host differentials. The period required for identification has been reduced to 10 to 14 days by eliminating the necessity of a primary increase of the rust on a susceptible variety. (Phytopath. 41: 286-290).

Virus diseases

Mosaic (virus), new to California, was reported by Byron R. Houston and John W. Oswald. In May 1951 this virus disease, which resembles Western wheat mosaic in some respects, was found in several barley and wheat plants. Its presence was not recognized soon enough to determine its distribution in 1951. The virus is readily transmitted to seedling wheat, barley, and oats when rubbed with expressed juice from diseased plants. There was no evidence of soil transmission. (Phytopath. 42: 12).

Results of a method for inoculating varietal test nurseries with the wheat streak-mosaic virus was reported by McKinney and Fellows. At Manhattan, Kansas, a fall sown wheat nursery was inoculated on April 26, 1950. All of the 35 varieties developed mosaic in from 80 to 95 percent of the plants. Another fall-sown variety nursery was inoculated on October 10. Fall observations indicated infection in all of the plants examined. Observations made April 30, 1951, indicated the presence of mosaic in each of 81 varieties of wheat in the nursery. Within the varieties, from 95 to 100 percent of the plants had mosaic. (PDR 35: 264). McKinney and Fellows also reported 24 wild and forage grasses found to be susceptible to the wheat streak-mosaic virus (PDR 35: 441).

Yellow dwarf (virus). Investigations reported by Oswald and Houston in California showed that the greenbug, Toxoptera graminum, is a vector of the cereal yellow-dwarf virus. There is a great similarity between the yellow-dwarf disease on oats and certain of the group of oat diseases referred to in the literature as "red-leaf." (PDR 36: 182).

AVENA SATIVA. OATS: H. R. Rosen in his 1950-51 report on oat diseases in Arkansas, stated that for the sixth successive year the fall of 1950 was unfavorable for the seeding of winter oats, so that the acreage dropped still further below that of 1944. While winter oats have outyielded spring oats by 40 percent on the average during the last 30-odd years, the difference of more than 60 percent obtained in 1951 was mostly due to the much heavier leaf hopper infestation on spring oats. The combination of a heavy fall crown rust (Puccinia coronata var. avenae) epidemic and a severe winter was largely responsible for the relatively low average State yield. (PDR 36: 153).

Puccinia coronata var. avenae, crown rust. Rosen and Murphy reported additional information on the identity of the new race of oat crown rust, tentatively identified as race 101, and on some other important aspects of its occurrence. This race offers a serious threat to both Victoria and Bond derivatives as well as to Red Rustproof strains. (PDR 35: 370).

Sclerospora macrospora, downy mildew, was observed in Arkansas, Mississippi, and Georgia in 1951. The disease was found in a field of an unnamed strain of Red Rustproof oats in Coweta County, Georgia, in April 1951. This apparently is the first instance of downy mildew found in Red Rustproof oats. It seems to occur most frequently in the Bond and Victoria derivatives. (Summers, Adair and Stanton, PDR 35: 510).

Whiteheads. S. Goto and others described types of whitehead occurring on oats in Minnesota in 1950-51. (PDR 36: 151).

HORDEUM VULGARE. BARLEY: Sclerospora sp. Downy mildew, which had been reported from California by Mackie in 1929, was not again observed in the State until the spring of 1951, when all the plants in large areas of a field near Davis were dead and the tissues matted and shredded. Only S. macrospora, which does not cause tissue shredding has been reported on barley. The fungus found in 1951 more closely resembles S. graminicola, which does cause severe shredding. (Oswald and Houston, Phytopath. 41: 942).

TRITICUM AESTIVUM. WHEAT: In 1951, yellow spot of winter wheat caused by Helminthosporium tritici-vulgare was observed causing severe reductions in yield for the first time

in Michigan, according to Andrews and Klomparens. (PDR 36: 10).

N. E. Borlaug and others, reporting on "Mexican varieties of wheat resistant to race 15-B of stem rust" (Puccinia graminis var. tritici) cite a considerable amount of circumstantial evidence to indicate that the 1951 summer 15-B epidemic in Mexico originated from spores blown into Mexico from the United States and Canada during the fall and winter of 1950-51. There was relatively little survival of these spores in northern Mexico during the winter season of 1950-51. However, in south central Mexico the disease increased to epidemic proportions during the summer of 1951. (PDR 36: 147).

ZEA MAYS. **CORN:** Paul E. Hoppe described the glass-tumbler technique for incubating seed corn in cold soil for disease tests without large refrigeration equipment (Phytopath. 41: 747). Later Hoppe reported a glass-tumbler-paper-doll technique for seed corn incubation and germination tests, which eliminates the need for a greenhouse and is simple, reliable, and much faster than methods used heretofore. Since the only special equipment needed is an ordinary refrigerator, the new technique should find wide usage in seed testing and phytopathological laboratories, and for manufacturers of fungicides. (Phytopath. 41: 856).

Bacterium stewartii, bacterial wilt. John R. Warren reported on the use of radioisotopes in determining the distribution of B. stewartii within corn plants. As he says "a new research tool" has been made available to the biological sciences with the recently increased production and more widespread distribution of radioactive isotopes. The growth or reproduction of B. stewartii was not seriously limited by radioactivity concentrations permitting assimilation of easily detectable amounts of radioactive phosphorus. The rapidity of the distribution of B. stewartii within inoculated corn plants was correlated with the rate of transpiration of the plant. The use of radioactive bacteria showed that there was no appreciable difference in the rate or extent of distribution of B. stewartii within susceptible and resistant inbreds. The feasibility and practicality of using radioactive tracer elements in phytopathological studies was demonstrated. (Phytopath. 41: 794).

Darluca filum, hyperparasite of corn rust (Puccinia sorghi). George Semeniuk and Edgar Vestal reported that one probable reason why corn rust was less severe in Iowa in 1951 than in 1950 was the presence of Darluca filum in the early formed uredosori. High percentages of parasitized uredosori occurred in areas where corn rust was severe in 1950, suggesting that the abundance of Darluca filum increased during that year. This is the first record of the hyperparasite on corn rust in Iowa and apparently the first record of its probable importance in controlling corn rust epiphytotics in the United States. (PDR 36: 173).

Helminthosporium turcicum, leaf blight, has become a disease of particular concern in many of the corn growing areas, according to Alice L. Robert and William R. Findley, Jr., who state that seed producers and corn breeders are well aware of the need for testing inbred lines and selecting for resistance to the disease. They reported diseased corn leaves to be a source of infection in artificial and natural epidemics of H. turcicum. The effect of natural outside environment on the life of the fungus in leaf tissue is not known. (PDR 36: 9). F. V. Stevenson and others reported a Florida breeding program for sweet corn resistance to H. turcicum. (PDR 35: 488). G. R. Townsend reported results of experiments to control sweet corn leaf blight (H. turcicum) and rust (Puccinia sorghi) in the Belle Glade region of Florida. Both diseases were well controlled by the application of Dithane dusts in a suitable schedule. The control of the two diseases by these treatments increased the yield of No. 1 corn by about 60 boxes per acre, and the total yield was increased by about 40 boxes per acre. (PDR 35: 368).

Rodent repellent effect of seed treatment. Welch and Graham reported definite indications of protection against rodents afforded by corn seed treatment with Arasan. (PDR 36: 57).

DISEASES OF FORAGE AND COVER CROPS

BROMUS MARGINATUS. **MOUNTAIN BROMEGRASS:** Ustilago bullata, head smut. Jack P. Meiners reported a new race of head smut on the Bromar variety of mountain brome. Although Bromar is highly susceptible to this new race, it is still superior to the common strains of mountain bromegrass because of its resistance to the other four races of head smut that attack B. marginatus and related grasses. To hold the incidence of this new race to a minimum it was recommended that the seed of this variety be treated. (PDR 36: 166).

PISUM ARVENSE. **AUSTRIAN WINTER PEA:** Meloidogyne sp., root knot, according to J. G. Atkins, Jr. has been found to be more severe than expected on winter peas and vetch in Louisiana. (PDR 35: 323).

SOJA MAX. SOYBEAN: Bacterial diseases. In North Carolina, J. H. Graham reported on new wildfire (Pseudomonas tabaci) symptoms on soybean and on the preservation of the three bacterial pathogens (Xanthomonas phaseoli sojense, P. glycinea, and P. tabaci) of soybean in culture. Of the three methods tried storage under mineral oil was the most successful. (PDR 36: 22).

Cephalosporium gregatum, brown stem rot. Infection with the brown stem rot organism hampers water flow through soybean stems, according to preliminary experiments by McAlister and Chamberlain. (PDR 35: 318).

Phyllosticta sojaecola, canker and leaf spot. R. A. Jehle and others reported a very local outbreak on soybeans in Maryland. (PDR 36: 155).

Rhizoctonia microsclerotia, aerial blight. Atkins and Lewis reported that Rhizoctonia aerial blight was observed in variety plots at Baton Rouge, Louisiana in 1950 and 1951. In 1951, it was more severe on certain varieties than the other common foliage diseases. Varieties differed considerably in susceptibility, Dorchsoy 31 and Ogden having been conspicuously more susceptible than others in the field. The authors point out that in areas where favorable environmental conditions may prevail, this blight should be considered a potentially destructive disease. (Phytopath. 42: 1).

TRIFOLIUM PRATENSE. RED CLOVER: Black patch has been shown to be largely responsible for red clover failures in certain sections of West Virginia. The disease is caused by a fungus that produces no spores and is as yet undetermined. It is very destructive, affecting all parts of the plants and causing great reduction in seed yield in fields with excellent stands. The fungus infects the seed and is seed-transmitted. It spreads from the infected seedling to other plants by means of aerial mycelium. The disease seems to be very prevalent in the eastern part of the State. Abundant moisture obviously favors it, and the heavy dews that are common even in dry weather may account for the prevalence of the disease in the mountain valleys. Experiments showed that seed treatment will decrease seedling infection and increase stands. (Leach and Elliott, PDR 35: 335).

VIGNA SINENSIS. COWPEA: Pathogenicity of Xanthomonas vignicola and reaction of cowpea varieties and related plants to the organism are discussed and tabulated by Helen S. Sherwin and C. L. Lefebvre. (PDR 35: 303).

DISEASES OF FRUIT CROPS

ANANAS SATIVUS. PINEAPPLE: Phytophthora cinnamomi, root and heart rotting. E. J. Anderson described a simple method for detecting this fungus in the soil. It had been used successfully in Hawaii for some 10 years and has been reported successful in Georgia by W. A. Campbell. (Phytopath. 41: 187-189).

CITRUS spp. J. M. Wallace, in reporting recent developments in studies of quick decline and related diseases, stated that it has been generally accepted for a number of years that quick decline in California and tristeza in South America are caused by the same virus or by closely related virus strains. Recent independent investigations in South Africa, West Africa, Brazil, and California seem to demonstrate conclusively that the stem-pitting disease of grapefruit in South Africa and the lime disease in West Africa are caused by the same virus that is responsible for tristeza and quick decline. The strains of the virus may vary in different localities. The species of aphis that transmits the viruses of the diseases in Africa and South America is not known to be present in California. Aphis gossypii, which at present is the only known vector of the virus of quick decline in California, has probably not been tested sufficiently to determine whether or not it will transmit the viruses that cause the similar diseases. The developments summarized in his paper clearly emphasize that the preventive control of this type of disease is much more complicated than it was formerly believed to be. (Phytopath. 41: 785).

Leprosis (scaly bark). Knorr and DuCharme described the resemblance between Argentina's lepra explosiva and Florida's scaly bark and demonstrated their probable identity. Investigation in both Florida and Argentina indicates that the trouble is associated in some way with a mite of the genus Brevipalpus. The disease has almost disappeared in Florida since the regular spraying and dusting program with sulfur has practically eliminated the mite there. The authors emphasized the importance of continued care to prevent the return of former serious incidence of the disease. They urged the adoption of the name "leprosis" in both locations. (PDR 35: 70-75).

CITRUS LIMON. LEMON: Lemon tree collapse and decline. According to E. C. Calavan and others the cause of this malady is known but the situation is becoming increasingly serious annually. During the first half of 1951 decline and collapse of trees were especially prevalent in Santa Barbara and Ventura Counties. In the first four months of 1951 in Santa Barbara county, 360 trees with the collapse symptom were examined. In this same County it was reported that orchards in which lemon trees had collapsed totaled 2,256 acres from 1940 to February 1951. More lemon trees have collapsed on grapefruit and sweet orange than on other rootstocks. (*Citrus Leaves* 31: 6-8, 16, 18, 38). Calavan and Wallace presented evidence to indicate that lemon tree collapse in California is not due to the quick decline virus. (PDR 36: 101).

FRAGARIA spp. STRAWBERRY: Botrytis cinerea, gray mold rot, of strawberry in Illinois was controlled with early spring fungicides such as Ferbam and Orthocide 406. (Dwight Powell, PDR 36: 97).

Phytophthora fragariae, red stele, according to E. M. Stoddard has been controlled by soil applications of disodium ethylene bisdithiocarbamate (Dithane D-14) in Connecticut. It seemed probable that the material was acting both as a therapeutic and as a soil sterilant. (*Phytopath.* 41: 858).

Virus diseases. Cooperative experiments on strawberry virus diseases carried out by the United States Department of Agriculture and the Oregon Agricultural Experiment Station, Corvallis, are reported by P. W. Miller. A wingless individual of the strawberry aphid, Captophorus fragaefolii, may, under greenhouse conditions, acquire strawberry yellows virus and transmit it to the wild strawberry, Fragaria vesca, after feeding for only one to three hours on an infected strawberry plant. It appears essential to control the insect vector absolutely in areas where certified plants are propagated and where isolation is not complete, to prevent the spread of yellows. (PDR 35: 262). The efficiency of the aphid in transmitting the crinkles virus is increased by a fasting period before feeding on a viruliferous plant. (PDR 36: 92). Sensitivity of some species of Fragaria to the strawberry yellows and crinkles virus diseases was determined. (PDR 35: 259). D. H. Scott and others discussed virus as a hazard in strawberry breeding in the eastern part of the country, and described methods of maintaining breeding stock virus-free. (PDR 36: 89).

MALUS spp. APPLE: Venturia inaequalis, scab. McCrory and Shay reported an apple scab resistance survey in South Dakota. Weather favored the development of an epidemic and provided an opportunity for field evaluation of scab resistance of hundreds of hybrid seedlings, varieties, and foreign introductions. The freedom from scab of Elk River, a selection from M. ioensis, and certain of its hybrids was of interest. (PDR 35: 433).

MALUS SYLVESTRIS. APPLE: Botrytis cinerea, blossom end rot. In no previous year had this blossom end rot been so general or so abundant throughout the Hudson Valley of New York, as in 1951, according to D. H. Palmiter. The ferbam fungicides showed the most promise for control. This disease had not been very prevalent in the past. (PDR 35: 435).

Stereum purpureum, silver leaf. In Washington, in the fall of 1950, scattered trees developed sporophores of S. purpureum; by the fall of 1951 the fruiting bodies were relatively common in the upper portions of the Okanogan, Methow, Entiat, and Wenatchee Valleys. The chance for survival of old trees invaded by Stereum was poor. (Sprague and Hord. PDR 36: 30).

OLEA EUROPAEA. OLIVE: Baines and Thorne reported that the nematode occurring on olive roots in California apparently is similar morphologically and pathologically to the citrus-root nematode, Tylenchulus semipenetrans, obtained from orange roots. They pointed out that the olive tree should be recognized as a host in any program planned for control of the citrus-root nematode. (*Phytopath.* 42: 77).

PRUNUS ANGUSTIFOLIA. WILD PLUM, CHICKASAW PLUM: Phony peach (virus). See under Prunus persica, peach.

PRUNUS CERASUS. SOUR CHERRY: Cocomyces hiemalis, leaf spot. Comparison of Actidione with some other spray chemicals for control of cherry leaf spot in Michigan was made by McClure and Cation. They stated that these experiments confirm previous observations that Actidione has exceptional qualifications as a foliage spray for sour cherries, with further indications that it has similar qualities for sweet cherry foliage. Its value as a lasting protectant was not determined. (PDR 35: 393).

PRUNUS PERSICA. PEACH: Glomerella cingulata, anthracnose. According to G. B. Ramsey and others, peach anthracnose was recognized as an important disease of Georgia grown peaches on the market in 1947. Since that time the disease has been found in increasing amounts in orchards in Georgia and South Carolina and in shipments from these States. Isolations from typical lesions yielded pure cultures of G. cingulata. Most cultures were of the gray type, but many of the pink type were also obtained. The gray isolates grew more rapidly in culture above 50° F. and caused more rapid decay of peaches above 60° F. than did the pink isolates. The pink isolates grew more rapidly in culture below 50° F. and produced more decay in peaches below 60° F. than did the gray isolates. The optimum temperature for both types of isolates was 80° F. as indicated by growth in culture and in inoculated fruit. All transportation tests indicated that there is danger of serious development of anthracnose in peaches through wounds made during harvesting and packing, and by contamination with spores in seasons when there is an abundance of inoculum in the orchards. (Phytopath. 41: 447).

Monilinia fructicola, brown rot. Poulos and Heuberger reported evidence from Delaware experiments showing that the use of effective insecticides, in conjunction with the regular fungicide schedule, aided significantly in controlling the fruit rot phase of the brown rot disease of peach. (PDR 36: 198).

Taphrina deformans, leaf curl. Foster and Petersen reported a leaf curl epidemic in the peach areas of northern South Carolina during the 1951 season, the first since the early 1940's. Cool, wet weather during late March and early April favored spread and development. The reaction of 73 peach varieties to leaf curl was listed. (PDR 36: 140).

Black tip (? chemical injury). McCornack and others reported an unusual dead tip condition observed in peach fruits in the Cucamonga area of California in June 1950 and again in 1951. In support of the hypothesis of air pollution as a cause of black tip, one grower appeared to have reduced the amount of injury in his orchard by installation of overhead irrigation, thereby probably washing off part of the material settling out of the air. Investigations were under way to determine, by chemical analysis, whether fluorine is the cause of black tip. (PDR 36: 99).

Virus diseases. Phony peach. According to G. KenKnight and others, incidence of phony peach in Spartanburg County, South Carolina suggested the wild plum, Prunus angustifolia as the source of infection. Wild plums more than a mile away from any recorded phony infected peach orchard, past or present, were indexed by Hutchins' root-grafting method. The results indicated that the virus is endemic or naturalized in the wild plum in this county. (PDR 35: 183-185). Similarly Cochran and others reported that root grafting tests in four counties in Georgia indicated that wild P. angustifolia trees adjacent to peach orchards where phony peach virus is present are commonly naturally infected and probably serve as a hold-over reservoir from which new orchards may acquire the virus. (PDR 35: 181-182).

Rosette (virus) was found in a small home orchard near Harrison, Arkansas in June 1951. This is the first report of peach rosette in this part of Arkansas, although two isolated cases have been found in other sections of the State. The infected trees were destroyed. (Curtis L. Mason, PDR 35: 510).

In January and February 1951, at Logan, Utah, two cases of Western X-disease developed in potted Lovell seedling peach trees after inoculation by Calladonus geminatus (leafhopper) that had been feed on infected chokecherry (Prunus virginiana var. demissa). Retention of the virus for at least 47 days was indicated. (G. H. Kalostian. PDR 35: 347). In February 1951, in tests carried out at Logan, Utah, leafhoppers (Calladonus geminatus) produced western X-disease in three potted Lovell peach seedlings after feeding on sour and sweet cherry trees infected with western X-little cherry virus. The insects retained the virus for at least 72 days. (G. H. Kalostian. PDR 35: 348).

Nyland and Schlocker reported a new disease of clingstone peaches, tentatively called yellow leaf roll, from California, where it occurred in about 20 orchards in Yuba County and 10 orchards in the adjoining Sutter County. The disease has spread rapidly during the last three years. (PDR 35: 33). They also reported (Calif. Dept. Agr. Bull. Apr.-May-June, pp. 39-42 with illus. in color, 1951) that transmission tests have demonstrated that yellow leaf roll is caused by a virus, and that the symptom picture does not fit any previously known virus disease or other disorder of peach trees. There is some resemblance to western X-disease which also occurs in the area but in their typical forms the two diseases can be distinguished readily. There appeared to be no varietal resistance and apparently trees of any age may be affected. Only clingstone varieties have been found affected, but results of experimental inoculations of freestone varieties indicated that freestones are susceptible.

RUBUS FLAGELLARIS var. **RORIBACCUS. LUCRETIA DEWBERRY:** Sphaerotheca humuli, powdery mildew. A field test of several fungicides for the control of this mildew on *Lucretia*

dewberry as reported by Young and Fulton showed that Actidione gave the best control of any of the materials tested but that mildew reappeared after treatments were discontinued. (PDR 35: 540).

RUBUS IDAEUS. LATHAM RED RASPBERRY: Erwinia amylovora f. sp. rubi. M. P. Starr and others reported that from an outbreak of a disease on this raspberry variety in Maine, a bacterial pathogen was isolated in pure culture and proven to be the cause of the infection. The characteristics of the pathogen suggested its close relationship with the apple fire blight organism; however, cross inoculation tests between apple and raspberry showed pathogenic differences and the raspberry bacterium was separated as a special form. (Phytopath. 41: 915).

VACCINIUM spp. BLUEBERRY: Demaree and Smith reported blueberry galls caused by a strain of Agrobacterium tumefaciens. For the study galls were collected from New Jersey, New York, Michigan, Washington, and British Columbia. (Phytopath. 42: 88).

VITIS spp. GRAPE: Field and laboratory investigations indicated that grape degeneration in Florida is due to Pierce's disease virus infection, according to Stoner, Stover and Parris. (PDR 35: 341).

J. H. Freitag reported that the Pierce's disease virus of grape was experimentally transmitted to 75 species of plants belonging to 23 plant families. Inoculations were made by means of three species of leafhoppers. Proof of infection depended on recovery of the virus by previously noninfective leafhoppers and its transfer to alfalfa and grape test plants. (Phytopath. 41: 920).

DISEASES OF NUT CROPS

CARYA ILLINOENSIS. PECAN: Cladosporium effusum, scab. According to R. J. Higdon, in spraying experiments near Batesburg, South Carolina, bordeaux mixture, Orthocide 406, and bordeaux mixture-ziram controlled the pecan scab fungus on the susceptible Schley variety to the extent that good quality nuts were produced. Ninety-three percent of the unsprayed trees were severely scabbed. (PDR 35: 272).

JUGLANS REGIA. PERSIAN WALNUT: P. W. Miller reported on diseases of filberts and walnuts in Oregon in 1951. Most outstanding was the black-line (girdle) of grafted walnuts (non-parasitic), which was responsible for the death of more grafted Franquette walnut trees in 1951 than any other cause. Its importance in Oregon was shown by the results of a tree by tree survey made in 1951 in 23 widely scattered walnut orchards in which a total of 8507 trees were examined. Out of these trees, 6405 were of the Franquette variety grafted on Northern California black walnut (Juglans hindsii) roots or its hybrid, and 1403 or 21.9 percent were in a declining condition. Sixty-nine percent or 968 of these declining trees had black-line or graft union failure. (PDR 36: 142).

DISEASES OF ORNAMENTALS

CENTAUREA CYANUS. CORNFLOWER: An unusual occurrence of sclerotia of Sclerotinia spp. with seed of Centaurea cyanus was reported in California by Baker and Davis. The development of the fungi was favored by the moist conditions of the coastal districts where most of the seed is grown. (PDR 35: 39).

BEGONIA sp. TUBEROUS BEGONIA: Pratylenchus sp., root-lesion nematode. Soil fumigation with certain nematicides to control the root-lesion nematode in tuberous begonias resulted in reduced injury to plants from nematode attack but reduction in numbers of nematodes was not adequate from the quarantine standpoint. In situations where nursery beds are fumigated for the control of nematodes, the degree of control must necessarily approach 100 percent before it can be considered practical from a quarantine standpoint. (Allen and Raski, PDR 36: 201).

ELAEAGNUS PUNGENS. THORNY ELAEAGNUS: Weber and Roberts reported that the hitherto undescribed silky threadblight of foliage of E. pungens in Gainesville, Florida is caused by the fungus Rhizoctonia ramicola n. sp. The diagnostic symptoms and signs of the disease are cortical necrosis of petioles, necrotic leaf lesions, and superficial mycelial strands. The

causal organism is characterized by its aerial habitat, failure to live in the soil, absence of spores and sclerotia and lavender color of mature mycelium on potato-dextrose agar. (Phytopath. 41: 615).

GARDENIA JASMINOIDES. CAPE-JASMINE: According to D. L. Gill control of the root knot nematode (Meloidogyne spp.) in the South by the use of tung-nut meal as a fertilizer has been claimed by nurserymen for several years. Results of tests showed that tung-nut meal is of no value as a soil treatment for the control of these nematodes. The benefit some growers reported was probably due to the fertilizing effect of the meal. Parathion thoroughly mixed with the soil was of considerable value in root-knot nematode control. (PDR 36: 18).

GLADIOLUS spp. **GLADIOLUS:** E. T. Palm and Roy A. Young reported that in the course of disease investigations in Oregon during the summer of 1951 observations were made on gladiolus abnormalities. Plants with green flowers and dying leaves were observed in two localities. At Corvallis 5 out of approximately 12,000 Picardy plants in an experimental planting, and at Grants Pass approximately 2 percent of the plants in a commercial planting of Pandora showed this condition. The flowers remained small and failed to develop normal coloration. Symptoms resemble those described for aster yellows on gladiolus in the East except that in the East leaves turn uniformly straw yellow. The authors stated that this condition has not been reported previously from the Pacific coast area. Another unreported abnormality occurred on gladiolus plants in experimental plantings at Corvallis. The petals had spur or cone-like protuberances, which were hollow and of the same color as the petals. The importance of gladiolus plants as a source of inoculum of the yellow bean mosaic and of the cucumber mosaic viruses was demonstrated in a test showing severe consequences of planting pole beans and cucumbers adjacent to gladiolus. (PDR 36: 108).

Urocystis gladioli, smut, has recently been observed on gladiolus seedlings in the bay area of California, causing blistering, shredding and necrosis of the stem and leaf tissues. Severe infection resulted in the death of the seedlings. (Phytopath. 41: 941).

ILEX spp. **HOLLY:** Phacidium curtisii, tar spot. According to John R. Cole tar spot was responsible for considerable damage to holly in southern Georgia during years of excessive rainfall. Both foliage and berries are attacked by this fungus. He conducted tests over a two-year period, including both sanitation and spraying for control of the disease. Phygon XL proved the most satisfactory for spraying. (PDR 35: 408).

NARCISSUS sp. **NARCISSUS:** A root-lesion nematode disease of narcissus associated with a species of Pratylenchus has recently appeared in Oregon, according to Harold J. Jensen and others. The disease has been observed in two of the major bulb producing areas of Oregon. (PDR 35: 522).

ORCHIDACEAE: W. A. Feder reported that flowering spikes of Vanda Miss Joaquim orchid plants grown for the export flower market were attacked by a foliar nematode, probably Aphelenchooides ritzema-bosi. Affected flower buds turn yellow, then brown; they shrivel and fail to open. As high as 50 percent of the flowering spikes in some fields were affected. The nematode was apparently distributed by splashing wind-borne rain drops. Excellent control was effected by spraying at weekly intervals with parathion at the rate of 2-4 lb. of 25 percent wettable powder per 100 gal. of water plus B-1956. A high degree of control was also obtained by the use of selenium as sodium selenate. (Phytopath. 41: 938).

ROSA spp. **ROSE:** Peronospora sparsa, downy mildew, was reported by Yarwood and Wilhelm in one greenhouse range in Alameda County and one in Contra Costa County, California. It probably had not been seen in the State since 1929. (PDR 35: 56).

DISEASES OF SPECIAL CROPS

ARACHIS HYPOGAEA. **PEANUT:** Meloidogyne hapla, root knot, according to W. E. Cooper, is widespread in the peanut growing area of North Carolina and is very destructive in heavily infested soils. The effect of crop rotation and soil fumigation on root knot control was evident in root knot indices and peanut yields in 1951. Preceding crops, other than peanuts, reduced root knot and increased yields in both fumigated and non-fumigated blocks. Within rotation treatments root knot indices were lower and yields were higher in the fumigated than in the non-fumigated blocks. (Phytopath. 42: 282).

BETA VULGARIS. SUGAR BEET: Heterodera schachtii, sugar-beet nematode. Dewey J. Raski reported greenhouse studies on the host range of the sugar-beet nematode. Results, he says, add to the evidence indicating that as yet the true host plant relationships of the sugar-beet nematode are not fully understood, and show the need of more fundamental work with this and other species of Heterodera. (PDR 36: 5).

CARTHAMUS TINCTORIUS. SAFFLOWER: C. A. Thomas reported experiments showing that resistance in safflower to root rot caused by Phytophthora drechsleri may be evaluated in the greenhouse. High soil moisture favored disease development. The reactions of several varieties and selections in the greenhouse tests were similar to those observed under field conditions. (Phytopath. 42: 219).

Puccinia carthami, rust, causing a foot and root disease, was first noted in two commercial fields and in a disease nursery in western Nebraska in 1950 and resulted in an almost total loss due to the infection of the underground parts of the plants. In 1951 it was again observed in a disease nursery at the Scotts Bluff Field Station, Mitchell, Nebraska. These fields were in safflower the previous season. Of 257 plants collected from the disease nursery on June 7, 1951, 98 percent showed rust pustules on the underground parts. Infection and production of pustules on roots by a non-systemic rust rarely occurs. No previous report of such a case could be found. Seed treatment was ineffective for control of the foot and root phases of the rust when infection took place from infested soil. Data indicated that the rust inoculum may definitely overwinter in the soil and thereby be economically important. (Schuster and Christiansen, Phytopath. 36: 211).

DIPSACUS FULLONUM. FULLER'S TEASEL AND PINCUSHION FLOWER: W. N. Stoner described a virus transmitted by the aphids Microsiphum rosae and Myzus persicae. This teasel mosaic disease is believed to be caused by a hitherto undescribed virus, for which the name Marmor dipsacum was proposed. (Phytopath. 41: 191).

ELEOCHARIS DULCIA. CHINESE WATERCHESTNUT: Dolichodorus heterocephalus, awl nematode. According to A. C. Tarjan, an extensive planting of Chinese waterchestnuts in South-eastern United States developed symptoms of decline. Examination of roots and soil from affected plants revealed the presence of awl nematodes. (Phytopath. 42: 114).

GOSSYPIUM spp. COTTON: Ascochyta gossypii, Ascochyta blight, occurred in 1951 on cotton plants grown in greenhouses at College Station, Texas. In 1950 it was observed in Navarro, Burleson, and Lubbock Counties. (L. S. Bird. PDR 35: 557).

Xanthomonas malvacearum, bacterial blight, occurs wherever cotton is grown, according to L. S. Bird. In 1951 a test designed to evaluate losses in cotton yields caused by bacterial blight infection showed that a highly significant reduction in yield of seed cotton was caused by the disease. Susceptible strains suffered an average loss of 18.6 percent, while Stoneville 20, a highly resistant strain, had no loss. The average monetary loss per acre for the susceptible strains was \$5.05. (PDR 36: 3).

HIBISCUS CANNABINUS. KENAF: Various agricultural workers reported disease and insect problems accompanying attempted commercial production of the fiber plant, kenaf, in southern Florida. (PDR 36: 121).

NICOTIANA spp. TOBACCO: In April 1951, a tobacco leaf spot was found at two locations in South Carolina in plant beds, from which an Ascochyta was isolated. The organism was tentatively identified as Ascochyta gossypii. (Holdeman and Graham, PDR 36: 8).

Meloidogyne spp., root knot nematodes. Investigations on the susceptibility to the various root-knot nematode species in the genus Nicotiana, reported by T. W. Graham, disclosed no indication of specialized pathogenicity that might complicate breeding for resistance in tobacco. (PDR 36: 75).

A. L. Taylor reported experimental infection of tomato roots with a Heterodera indistinguishable from the potato golden-nematode (H. rostochiensis), obtained from tobacco roots and from soil from a tobacco field in Connecticut. (PDR 36: 54).

Peronospora tabacina, blue mold (downy mildew). A field outbreak of tobacco blue mold occurred in Connecticut, where shade growers sustained a loss of 10 percent of the crop value. Seed-bed damage in the State was low; as a result growers relaxed their control efforts. Though spread in the field is unusual a cool, wet, early summer afforded ideal conditions for an epidemic.

In some areas despite the above-normal January temperatures, the disease was kept at a low level by light rainfall, above average spring temperatures, and control measures. (Miller and O'Brien, plant disease warning service in 1951, summary, PDR Supp. 208. Distribution map p. 239).

Phytophthora parasitica var. nicotianae, black shank. Harry R. Powers, Jr. reported that recent experiments indicated that wilting in black shank-infected tobacco plants is due to local obstruction of water movement through the vascular elements rather than to systemic effects of toxic metabolic products of the pathogen. However, this does not preclude the possibility that toxic substances are produced and are in some way responsible for the obstruction. (PDR 36: 127). W. D. Valleau pointed out that there is probably little accurate information on the persistence of P. parasitica var. nicotianae in the soil in the absence of tobacco. He recorded instances indicating that the fungus may disappear completely from the soil in three years, after which a black-shank-free crop may be grown, provided there is no recontamination. The extremely rapid spread of the disease in Kentucky during the past two years, sometimes over tenfold in a county, has made measures to stop spread of the disease and to eradicate it at once in new localities an immediate necessity. He concludes "Perhaps no other pathogenic fungus lends itself so well to an eradication program." (PDR 35: 453).

ZOSTERA MARINA. EELGRASS: In the summer of 1951, Ralph W. Dexter reported the continuance of eelgrass recovery on the Massachusetts shore line. (PDR 35: 507).

DISEASES OF TREES

In the Southeast, according to G. H. Hepting and others, woody plants suffered severe damage from a warm fall followed by a sudden drop to extremely cold weather. (PDR 35: 502). Frederick H. Berry summarized and described the effects of this cold wave on Asiatic chestnut trees. Trees of all sizes and age classes were injured. (PDR 35: 504).

L. W. R. Jackson reported that 2,000 one-year-old Monterey pine seedlings were planted on the Georgia Forestry School forest at Whitehall, Georgia. The planting survival was 85 percent. The entire planting was killed during the 1950-51 winter season. The loss of the planting is attributed to the unusually low temperatures of 8° F. on November 25, 1950 and 9° F. on February 3, 1951. (PDR 36: 166).

CORNUS FLORIDA. DOGWOOD: Elsinoë corni, spot anthracnose. In Maryland, during the summer of 1951 the known northerly distribution of the disease was extended. (Jehle and Jenkins. PDR 36: 110). Jehle and Jenkins also reported slight infection present on bracts of pink dogwood in two locations in Maryland. This appears to be the first record of the disease on bracts of pink dogwood. (PDR 35: 277).

PINUS spp. PINE: Hamilton and Jackson summarized effects of fungicidal dust treatment of shortleaf pine (P. echinata) and loblolly pine (P. taeda) seed on percentage of germination and amount of damping-off. (PDR 35: 274).

Phytophthora cinnamomi, root disease. W. A. Campbell reported the occurrence of P. cinnamomi in the soil under pine stands in the Southeast. He stated "In summary, the development of a method of detecting Phytophthora cinnamomi in the soil regardless of its relationship to a diseased host made it possible to obtain information on its distribution in the soil under pine stands in the Southeast. This information was considered desirable because the fungus has been found associated with littleleaf-diseased shortleaf pine and is more abundant in the soil under diseased than under healthy trees. Furthermore, soil assays for P. cinnamomi in connection with a study of the relation of soil characteristics to the presence of littleleaf in South Carolina disclosed that the fungus was present in 91 percent of the plots from which samples were taken. There appeared, however, to be no correlation between the relative amount of P. cinnamomi in these plots and the severity of littleleaf. When the study was extended to pine stands outside the littleleaf area the fungus was found in the soil under 48 percent of all stands in which plots were located and under 52 percent of these stands having shortleaf and loblolly pine, the species also present on plots in the littleleaf area. P. cinnamomi was found to occur in practically all areas tested in the Southeast and in places remote from any known connection with a recognized disease." (Phytopath. 41: 742).

QUERCUS spp. OAK: The perithecial stage of Chalara quercina, the oak wilt fungus, has been obtained in culture by T. W. Bretz. As far as is known, this is the first report of this

stage of oak wilt fungus. (PDR 35: 298). In North Carolina, George H. Hepting and others reported that isolates of the oak wilt fungus from one tree produced perithecia without being paired. They also noted that this tree may be highly significant from the control standpoint. (PDR 35: 555). H. L. Barnett reported a new method for quick determination of the oak wilt. C. quercina can be positively identified in less than one week using a technique based on a special agar medium, the characteristic appearance of the mycelium, and the quick sporulating habit of the fungus. The composition of the medium is given. (Phytopath. 42: 2).

According to Marvin E. Fowler, oak wilt was discovered in many new localities and in seven additional States in the summer of 1951. Surveys initiated in 1950 were continued on a larger scale in 1951. Scouting from low-flying airplanes has proved to be highly satisfactory because of the pronounced leaf symptoms on affected trees. (PDR 36: 162).

In western Maryland, Weaver and Jeffers reported oak wilt found in Garrett County on July 19, 1951. (PDR 36: 28). Oak wilt was reported by Lancaster and Rumph in Allegheny County, Pennsylvania, on Q. palustris. Collections from these oaks were made May 31, 1951. It is believed that this is the first report of the occurrence of oak wilt in western Pennsylvania. (PDR 35: 383). Forrest C. Strong reported the known distribution of oak wilt in Michigan. Thirty-two locations of oak wilt had been found, and confirmed by laboratory isolation of the causal fungus. These locations are scattered through 12 counties, with the greatest concentration in the south central part of the State. (PDR 35: 557). In 1951, J. C. Carter reported oak wilt in three additional counties (Sangamon, Madison, and Cumberland) in Illinois. Most of the 53 counties in which the disease has not been found are located mainly in the central part of the State where the land is utilized extensively for growing grain crops and where oak timber is not abundant. In the northwestern part of the State the disease has become seriously destructive in many localities, but in eastern and southern counties it occurs only occasionally. (PDR 36: 26). Oak wilt infection in Kansas was found two miles east of Bonner Springs, in Wyandotte County. The organism was isolated from several Quercus velutina trees. Thirty to forty trees appeared to be involved in the area. Although no aerial surveys were made, the eastern 35 counties, which contain the majority of the Kansas oaks, were visited during the late summer by automobile. (I. J. Shields. PDR 36: 68).

Taphrina caerulescens, leaf blister, severely defoliated Q. nigra, and affected Q. phellos, Q. laurifolia, and Q. virginiana in southern Mississippi in May 1951. In individual cases approximately 50 to 60 percent of the foliage was shed by the end of May. Cool, wet weather in April probably favored the disease, while hot dry weather in May probably encouraged defoliation of the diseased leaves while retarding the development of new ones. (Berch W. Henry. PDR 35: 384).

ULMUS spp. ELM: Ceratostomella ulmi, Dutch elm disease. Caroselli and Feldman, reporting on Dutch elm disease in seedlings, stated that inability to inoculate elm seedlings successfully with the fungus has impeded studies on control and chemotherapy. Inoculation by either the agar-disc nor the spore-suspension method was successful in producing a high incidence of the disease in seedlings, although disease in field trees was severe when either of these methods was employed. A high incidence of disease was obtained by subjecting elm seedlings, in full leaf, to darkness for 5 days prior to inoculation, after which they were kept in 9-hour day-light. This method had been used successfully on over 2400 elm seedlings. (Phytopath. 41: 46). J. C. Carter reported that during 1951 eleven additional trees infected with Dutch elm disease were found in four counties in Illinois. No explanation for the occurrence or distribution of the diseased trees could be given. (PDR 36: 24).

DISEASES OF VEGETABLE CROPS

ALLIUM CEPA. ONION: The control of blast (cause indefinite) and downy mildew (Pseudospora destructor) by carbamates was reported by Newhall and Rawlins. It appears now that we have a combination fungicide-insecticide program recommendable for mildew, blast, and thrips control. (Phytopath. 42: 212).

APIUM GRAVEOLENS. CELERY: George W. Swank, Jr. reported Florida experiments indicating that trans 1, 4-dibromobutene-2 is an economically good soil fungicidal fumigant that will control damping-off in celery seedbeds. (PDR 35: 492).

CUCURBITS. CUCUMBER, MELON, SQUASH: Paul D. Keener reported that some of the factors involved in the severe virus infections affecting cantaloupe (Cucumis melo) and honey dew melon (C. melo var. inodorus) in Arizona in 1950-51 were seed transmission and proximity

to aphid-breeding areas. (PDR 36: 128).

Alternaria cucumerina, leaf blight. In the lower Rio Grande Valley of Texas in 1951, the program of breeding for disease resistance was set back severely by a severe outbreak of leaf blight. According to G. H. Godfrey, this was the first occurrence of such an epidemic in the last 14 years. Some of the cantaloupe strains resistant to downy mildew became heavily infected with Alternaria. (PDR 36: 69).

George F. Weber and John H. Owen reported the following significant watermelon diseases in the Gainesville area of Florida in the 1951 season: Alternaria cucumerina, leaf spot, appeared in scattered local areas in the fields, killing the foliage and vines. Infection ranged from 1 to 75 percent. This disease ranked second to wilt in amount of damage. Fusarium oxysporum f. niveum, Fusarium wilt, was the most prevalent and destructive disease in the Gainesville area in the 1951 season. The dry season, becoming more acute as the crop matured, combined with high temperatures contributed to the large losses due to wilt. Infection ranged from 1 to 5 percent on new land to 10 to 50 percent of the plants killed on old cultivated land. (PDR 35: 355).

Pseudoperonospora cubensis, downy mildew. In South Carolina, increased susceptibility of the Palmetto cucumber to downy mildew, which is presumably due to the appearance of a new race of the pathogen, according to Epps and Barnes, has made necessary a fungicide program as intensive as that which was used before Palmetto was developed. This program, which has never given adequate disease control on the susceptible Marketer, has proved satisfactory on the resistant Palmetto. (PDR 36: 14). According to the final report of the Plant Disease Warning Service losses from cucurbit downy mildew were at a minimum. The disease occurred along the Atlantic Coast as far north as Pennsylvania; however, it was not reported in Maryland and Delaware. (PDR Supp. 208).

IPOMOEA BATATAS. SWEETPOTATO: Internal cork (virus). L. W. Nielsen described a core-grafting technique that reduces the time required for obtaining disease readings. The method may prove to be an essential step in appraising internal cork resistance in various sweetpotato stocks and selections. (PDR 36: 132). According to Marguerite S. Wilcox and B. D. Ezell the effect of storage temperature on the development of internal cork of sweetpotato apparently had not been reported previously. They give a table showing percentages developing internal cork when stored at different temperatures. Their results indicated that 70° F. is better for appraising internal cork susceptibility and latent infection than the lower temperatures usually recommended for sweetpotato storage. (Phytopath. 41: 477). Struble, Cordner and Morrison reported that during the 1951 survey in Oklahoma cork was found in all areas surveyed, but as before was not found in all varieties at all locations. Increase or decrease was not consistently associated with any one variety. Apparently the situation was not materially worse in 1951 than it had been in 1950, and from the two years' observations the authors conclude that internal cork is of relatively minor importance in Oklahoma. (PDR 35: 227).

LACTUCA SATIVA. LETUCE: Mosaic (virus). Grogan and others reported on the use of mosaic-free seed in controlling lettuce mosaic. All of the commercial lettuce seed lots tested in California harbored 1 to 3 percent lettuce mosaic virus. Growing seedlings in an insect-free greenhouse and roguing out all infected plants before transplanting to a mosaic-free locality yielded several pounds of mosaic-free seed. Test plots, surrounded by commercial lettuce, were sown with samples of the mosaic-free seed in the Salinas Valley region in the spring of 1951. The percentage of infection in these areas was substantially reduced, indicating the practicability of combating the disease by this method. (Phytopath. 41: 939).

LYCOPERSICON ESCULENTUM. TOMATO: Fred A. Blanchard reported on aureomycin chemotherapy of crown gall (Agrobacterium tumefaciens) in tomatoes. Fewer and smaller galls developed on tomato plants grown in a solution of aureomycin hydrochloride in mineral nutrient solution following needle inoculation with A. tumefaciens than on similar plants grown in mineral solution alone. (Phytopath. 41: 954).

Phytophthora capsici, stem rot extending from soil level up to 15 cm. above, caused the death of isolated tomato plants near Stockton, California, according to P. D. Critopoulos. (Phytopath. 41: 937).

Phytophthora infestans, late blight, in 1951 continued its northwestward movement across the northern States. Reductions in yield were low, in spite of the widespread acreage. Fungicides were effective in controlling the disease. (PDR Supp. 208, distribution maps page 238.)

Stemphylium solani, gray leaf spot. Younkin and others reported that gray leaf spot of tomatoes occurred in epidemic proportions in New Jersey, Pennsylvania, and the Eastern Shore

of Maryland and Virginia in 1949, 1950, and 1951. For two years tests were conducted to determine efficacy of different fungicides on control of gray leaf spot and anthracnose. In one typical test defoliation averaged 15, 34, 41, 56, and 75 percent in replicated plots sprayed seven times with manganese ethylene bisdiethiocarbamate, zineb, ziram, tribasic copper sulfate, and no fungicide, respectively. (Phytopath. 42: 114).

Trichothecium roseum, fruit rot. According to R. E. Deems (Phytopath. 41: 633) specimens were collected from five different glasshouses in Ohio from April through June 1950. For other reports see Plant Disease Reporter 31: 260, 1947.

PHASEOLUS spp. BEAN: A leaf spot disease of snap bean (P. vulgaris) and lima bean (P. lunatus) with which a species of Ascochyta was consistently associated has been repeatedly observed and collected in the commercial bean producing areas of western North Carolina since 1948. Characteristics of the fungus resemble those of A. phaseolorum described on bean and A. abelmoschi from okra, and cross-inoculation tests gave results indicating that one species of Ascochyta may be responsible for the disease in both beans and okra. In June 1951, the disease was also found in eastern North Carolina, Duplin County (D. E. Ellis. PDR 36: 12).

Corynebacterium flaccumfaciens, bacterial wilt, was first recorded in central Washington in 1951. From the record of seed sources it seems probable that some seed fields were infected in 1950. In furrow-irrigated fields where this disease was seen, only single isolated plants were involved. (J. D. Menzies, PDR 36: 44).

Fusarium spp., root rots. R. D. Watson described equipment and methods used in applying soil fumigant fungicides for controlling root rot and seed decay in peas and beans in Idaho. Fusarium was the chief offender. (PDR 35: 324).

Pseudomonas medicaginis var. phaseolicola, bacterial halo blight. Mitchell, Zaumeyer and Anderson reported translocation of streptomycin in bean plants and its effect on bacterial blights. Primary leaves of bean inoculated with the halo blight organism failed to develop symptoms of halo blight when a minute amount of streptomycin sulfate was placed on the stems of the plants prior to inoculation. Similar plants inoculated in a like manner developed very mild symptoms of the disease when dihydrostreptomycin sulfate was applied to their stems prior to inoculation. These antibiotics were apparently absorbed by the stems and translocated upward into the primary leaves in sufficient amounts to prevent growth and development of the organism. Of 12 antibiotics tested, streptomycin sulfate and dihydrostreptomycin sulfate were highly effective against this organism. Streptomycin sulfate did not affect growth of the plants a detectable amount, but dihydrostreptomycin sulfate checked their growth very slightly at the dosage level used. Terramycin hydrochloride and aureomycin hydrochloride reduced the severity of symptoms but injured the plants and suppressed growth. Other antibiotics did not reduce severity of symptoms appreciably. (Science 115: 114-115). Results of Montana tests on the use of fungicides to control bacterial halo blight were reported by M. M. Afanasiev and others. Bordeaux mixture produced complete control, sulfur only slight control, and Fermate none. Even after severe hail damage bordeaux continued to protect the beans from infection. (PDR 36: 135).

Pythium spp. Stem rot. Charles Drechsler reported bean stem rot in Maryland and Delaware caused by several species of Pythium. (PDR 36: 13).

Uromyces phaseoli var. typica, rust. In 1951, a single case of rust infection was found in sprinkled beans on the Pasco project, the newly irrigated area of the Columbia Basin. This is the first record of bean rust in central Washington. The entire farm was plowed out of sage brush in late spring of 1951. Circumstances suggested that infected plant parts may have come in with the seed. It was generally assumed that bean rust would never be a problem in the Columbia Basin area prior to this observation. (J. D. Menzies, PDR 36: 44). H. H. Fisher reported differentiation and distribution of the ten different new physiological races of bean rust collected in several States in 1941-51. (PDR 36: 103).

New York 15 mosaic (virus) is very widely distributed in the bean crops throughout the Columbia Basin area in Central Washington, being more than usually prevalent in 1951. Since this virus is seed-borne and no other hosts are known, the seed used was believed to be the primary source of infection. (J. D. Menzies, PDR 36: 44).

PISUM SATIVUM. PEA: Hagedorn and Hanson reported a comparative study of the viruses causing Wisconsin pea stunt and red clover vein mosaic. The study brought out strong similarities between the Wisconsin pea stunt virus and isolate 101 of the red clover vein-mosaic virus indicating their probable identity. (Phytopath. 41: 813).

SOLANUM TUBEROSUM. POTATO: W. F. Mai and others reported the ineffectiveness of

methyl bromide for killing the causal organisms of ring rot (Corynebacterium sepedonicum) and potato seed piece decay (Fusarium sambucinum). (PDR 35: 356).

Ditylenchus destructor, potato rot nematode. In the United States, according to Dallimore and Thorne, D. destructor has been reported infecting potatoes on a few farms near Aberdeen, Idaho, but rarely have the infections been severe enough to cause significant losses. Potatoes and sugar beets are the most commonly cultivated crops in this locality and the cropping system most generally followed consists of planting alfalfa with a grain nurse crop. The alfalfa remains three or four years, is then plowed under and is followed by potatoes for one or two years, after which sugar beets are planted a year or two. Thus the rotation includes from two to four years of host crops for D. destructor. Dandelions invariably were present in the old alfalfa stands and doubtless aided in carrying over the nematodes between potato crops. (Phytopath. 41: 872).

Heterodera rostochiensis, golden nematode. See under Nicotiana.

Phytophthora infestans, late blight. Miller and O'Brien in their summary of the crop plant disease forecasting program, stated that late blight continued its northwestward advance as noted in last year's summary. (Map p. 238 of PDR Supp. 208). Estimated reduction in yield varied from 2 percent to as high as 50 percent tuber loss. Lack of spread in many instances was attributed to good disease control.

According to Hyre and Horsfall, an analysis of data obtained from Connecticut records, on the incidence of late blight for the period 1902-50 indicates that it is possible to predict the occurrence of the disease with about 80 percent accuracy by means of a critical cumulative rainfall line and weekly mean temperatures. In only one year out of '49 was blight severe when the forecast would have been for no blight. (PDR 35: 423).

Synchytrium endobioticum, wart. Russell Hyre described and illustrated the potato wart eradication program in Pennsylvania. (PDR 35: 326). A new severe case of potato wart was reported near Freeland, Pennsylvania by Russell Hyre. One warted potato was reported in Allegany County, Maryland by R. A. Jehle. (PDR 35: 432).

According to W. G. Keyworth in a special study, tests showed that strains of Verticillium albo-atrum pathogenic to potatoes were present in all reported cases of premature wilting in potato fields in Connecticut. (PDR 36: 16).

Rugose mosaic (virus). According to Darby and Larson it has been an accepted fact for some time that "Rugose Mosaic" of potato was caused by a virus complex, the components of which are potato viruses X and Y. In studies at Wisconsin it has been shown that each of the components of the rugose complex exist as strains, and that these strains vary in virulence. Rugose type symptoms may be produced by inoculating with only the potato virus Y component of the complex, evidenced by the fact that the potato virus X-immune USDA seedling #41956, and virus X-free potato varieties, when inoculated with any isolate of virus Y produced typical rugose type symptoms, the severity of which is governed by the strain used and the temperature at which the plants are held after inoculation.

It can no longer be said that rugose mosaic type symptoms are the result of a virus complex, potato viruses X and Y in combination, but are also caused by strains of potato virus Y alone on virus-free potatoes. (Amer. Potato Jour. 28: 561-562. 1951).

DIVISION OF MYCOLOGY AND DISEASE SURVEY



